

A REVIEW OF MEDICINAL AND COSMETICS PLANTS FOR HERBAL SOAP DEVELOPMENT

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Article Received on 29 Jan. 2026,
Article Revised on 18 Feb. 2026,
Article Published on 01 March 2026,

<https://doi.org/10.5281/zenodo.18797484>

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How to cite this Article: Meghana Gore*, Sahikh Kashira Mehna, Pranay Kalgude, Sakshi Warde Nishika Patilmahima Patil (2026). Entomological Surveillance Of Mosquitoes (Diptera Culicidae) "A Review Of Medicinal And Cosmetics Plants For Herbal Soap Development". World Journal of Pharmaceutical Research, 15(5), 181-189.

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ABSTRACT

This study aims to find herbal plant and their various parts that can be used as cosmetics. correlates the phytochemical properties with benefits in cosmetics. Future, it also related to deeper reasoning of their medicinal properties. Formulation of herbal soap will reduce the stress caused to skin, multi- benefit action will give more satisfaction to the users than single purpose soap. This review will focus on chemical composition of each ingredient coupled with their therapeutic benefits and application towards skin health.

KEYWORDS- Cosmetic, Herbal Soap, Medicinal Plant.

INRODUCTION

Herbs have been used since ancient time in history of mankind. Ayurveda that originates from India dates back to 5000 years shows the use of plants as herbs for treatment of diseases and disorders. Ayurveda led to the current medicinal science.

Similarly, other countries found their treatment system as Unani from Arabic countries; Homeopathy from Germany; Chinese medicine system.

Herbal cosmetics contain plant phytoconstituent to formulate cosmetics that influence the function of skin. These cosmetics maybe used for aesthetic purpose such as de-tanning, depigmentation, reduce acne and scares, lightening the skin complexion, alter they skin oil content, beautifying the skin texture, etc. or therapeutic purpose such as treatment and control

of eczema, lesion, etc. Herbal soaps are used for cleansing, removing tan, getting rid of pimple and acne, moisturizing, fragrance and for protection from moth. They are either used for single purpose or multiple purpose.

Advantages

- It is safe
- Shows less or no side effect
- It is compatible with skin
- There are wide variety to choose from
- They are inexpensive

Disadvantages

- Onset of action is long (usually takes from a month or so)
- They cause mild to severe side effects such as allergies, headache, nausea, asthma
- There are no regulations on herbal products
- They show many interactions with food and/or drugs

MATERIALS AND METHODOLOGY

- Use internet, books journals, review and research articles and textbooks to understand the topic
- Enlist names of plants you are interested in
- Study various plants of interest and medicinal use
- Note down findings necessary and useful for formulation of soap in future
- Study what is herbal soap, its advantages and disadvantages
- Know about potential benefits of herbal soaps
- Study currently available articles about herbal soap. Also use internet such as videos to know more about them



Figure 1: A Herbal Soap.

PLANT STUDY

Various plants and their various parts are used for both medicinal and cosmetics purpose. This study highlights how medicinal reasons are foundation of cosmetic benefits.

I. COCONUT- Coconut fruit have been used as moisturizer since ancient time. Its benefits lie in the fatty acid chains that acts as oil to moisturize deep layers of skin. It contains linoleic acid that, a polyunsaturated omega 6 fatty acid that prevents the skin from free radical damage and protect the skin against acne. Coconut contains antioxidant.

II. RED SANDALWOOD- Red sandalwood enhances the skin complexion and brightens it. It helps fade dark spots, hyperpigmentation, and blemishes, resulting in a more even-toned complexion. It acts as mild exfoliant, removes dead skin and unclog the pores. It's overall action help to give skin a smooth texture. It helps in reducing acne and its appearance. It helps to control excess sebum secretion and prevent clogged pore. It has cooling, soothing and astringent properties. It can be useful in eczema to reduce inflammation and relief irritation. In hair care, It nourishes the scalp, strengthens hair follicles, and promotes hair growth.

III. BEETROOT- Beetroot contain betacyanin, an anti- oxidant. It induces translocation of erythroid 2-related factor (Nrf2) by stimulation at mRNA and protein level. Stimulation of GSMT (Glutathione S-transferase mu), GSTP(Glutathione S-transferase-P), GSTT-HO(Glutathione S-transferase theta- heme-oxygenase) and NQO1 (NAD(P)H quinone dehydrogenase 1)helps in hepatoprotective and anticarcinogenic effect. Carotenoid (also called as tetraterpenoids) contain carotene, lycopene and lutein are strong anti-oxidants and can act against cancer. Beetroot is useful in breast, colon, lungs, stomach, myeloid leukemia for inhibition of tumor through various mechanism. It contains nitrous oxide (NO) which is responsible for dilating the blood vessels, this improves the blood flow.

IV. COFFEE- Coffee contains caffeine and theophylline mainly useful for increasing alertness and attention. Caffeic acid and chlorogenic acid reduces body weight, visceral fat mass, insulin level. While chlorogenic acid also reduces triglyceride significantly. Theophylline decreases release of histamine and other mast cell mediators which are responsible for inflammation in allergies, asthma, COPD, etc therefore acts as anti-inflammatory. Coffee is used as scrub as it reduces acne production. It also reduces puffiness by improving blood circulation due to relaxation of smooth muscle. It may reduce cellulite appearance. It is also used for exfoliation of cell skin cells and debris.

V. SHATAVRI- Shatavari is another excellent anti-oxidant plant. Shatavarin IV enhances Glutathione peroxidase (GPX) and Glutathione (GSH) both of which are anti-oxidant. Shatavari has flavonoids such as Rutin, garlic acid, trans-chalcone, ferulic acid, Naringenin, catechin, genistein, kaempferol, daidzein, etc. They show free radical scavenging acting. This action is also important cancer prevention. The aqueous extract of shatavari roots are said to enhance natural killer cells activity, T-cell activation and uptake secretion of Th1 (IL2 and IFN- γ) and Th2(IL4) cytokines.

VI. HONEY- aqueous extract of honey shows antimicrobial, antibacterial and hepatoprotective action. It contains glucose oxidase and hydrogen peroxidase, pinocembrin and other such acids that support antimicrobial activity. It induces anti-apoptosis protein, p53, caspases 3 activation, poly (ADP-ribose) polymerase (PARP) and pro-apoptotic protein Bax all which lead to inhibition of cell growth and cell death. The phenolic and flavonoid compounds in honey help in treating inflammation.

VII. LICORICE- Licorice contains Glycyrrhizic acid that shows anti-inflammatory and anti-viral properties. Pinocembrin shows protective effect on ulcerative colitis. It reduces expression of IL-6, IL-1 β and TNF- α while it increases TGF- β helping in cell reproduction and regulation. It activates AMPK-mediated fatty acid oxidation, inhibits lipogenesis and promotes lipolysis (reduction in fatty liver). Pinocembrin and Glabridin shows anti-oxidant action. Glabridin and Liquiritin reduces melanin which is responsible for hyperpigmentation. Licochalcone shows anti-inflammatory action and reduces redness on skin. Liquiritigenin and iso-liquiritigenin shows estrogenic activity.

VIII. ALMOND OIL- It is also used for similar purpose including anti-oxidant, moisturizer, etc. Vitamin E and oleic acid in almond oil reduces fat near abdomen and fat deposition near abdomen. Alpha-tocopherol inhibits newer free radical whereas gamma-tocopherol neutralizes existing one's. promote plasma membrane repair. Alpha-tocopherol regulate platelet aggregation.

IX. TULSI- Tulsi is called as a holy plant because it has multiple benefits. It contains vitamin C and antioxidant (such as eugenol), they prevent cellular oxidation and prevent cell damage. Tulsi can be used as mild diuretic agent. It promotes urinary excretion which promote excretion of most of the compounds. Calcium oxalate is slightly basic in nature,

therefor acetic acid of lemon can help in its excretion. It is used to treat headache and migraine due to presence of eugenol.

X. LEMON- Lemon and lemon extract are used in both traditional and modern cosmetics. vitamin c reduces LDL and triglyceride level significantly and increase HDL level if taken 500mg/d. It reduces C Reactive Protein (CRP), interleukin 6 (IL6), triglyceride and fasting blood glucose (FBG) giving overall anti- inflammatory action. Bergamottin a furanocoumarins found in lemon has anti-cancer activity. it shows high degree of moisturization to skin. It reduces thermal epidermal water loss (TEWL). It reduces pigmentation by interfering with melanin production. This reduces hyperpigmentation and fades dark spots.

XI. HARITAKI- chebulagic acid shows hypoglycemic activity by inhibiting alpha glycosidase, enhance PPAR α and PPAR γ signaling. Chebulagic acid inhibits action of COX2 and 5LOX enzyme giving itself an anti- inflammatory action. It acts as proton pump inhibitor along with reducing gastric acid and upregulating mucin secretion. Chebulinic inhibits Human enterovirus 71 (EV71) (anti-viral action). It enhances Fenton reaction mediated damage to monochromic substance – deoxy-nucleoside and deoxy-nucleoside triphosphate which inhibits DNA replication in cancer cells. It activates caspases, DNA fragmentation, mitochondrial membrane permeation, extracellular signal regulated Kinase (ERK), cleavage of poly (ADP- ribose) polymerase, apoptosis and condensation of chromatin. Chebulinic acid reduces glutamate induced oxidative stress and Ca²⁺ influx in cell. Alcoholic extract of Chebulinic acid inhibits ERK phosphorylation and hence reduce TGF β 1 which makes it useful as anti- fibrotic.

XII. TURMERIC- Turmeric is a popular medicinal remedy for its anti-septic property. This can also inhibit production of acne, cyst and staph. turmeric induces apoptosis and inhibits proliferation and invasion of tumor by several mechanisms to show anti-cancer activity. Addition of O-methoxy enhances its effect in suppressing NF κ B. It inhibits COX-2, LOX and inducible Nitric oxide synthase. The phytochemical present in turmeric helps in chelating heavy metals from body.

XIII. FENUGREEK- The saponin present in Fenugreek activates the insulin receptor present on fat and muscle cells, making it more sensitive to insulin. This reduce insulin resistance in Diabetes type 2. trigonelline helps to protect against Alzheimer through

several mechanisms. Reducing chronic inflammation in brain, preventing damage to nerve cells, providing protection against factors contributing to cell death. Due to high content of iron in Fenugreek (33.5 mg /100g) anemia can be prevented as daily requirement is 18 gm.

XIV. ASHWAGANDHA - Ayurveda ashwagandha is termed as “Queen of Ayurveda”. It is a Rasayana of Ayurveda – a real potent regenerative tonic possessing several pharmacological activities including neuroprotective, anti-tumor and analgesic. It inhibits cellular pathway involving p13k. p13k is responsible for formation of cellular structure (abnormal structures) including tau protein and amyloid β . Ashwagandha powder reduces the level of cortisol and helps to reduce the stress related problems. It controls the blood sugar level in diabetic patient by increasing insulin production in type 1 diabetes and improve insulin sensitivity in type 2 diabetes. Ashwagandha is a potent aphrodisiac and might help in stress inducing male fertility by improving the level of testosterone.

XV. RICE- Rice flour is used for exfoliation on skin. It is used for exfoliation with other ingredients. It removes excess oil and sebum from skin. It also removes dead skin cells, impurities and debris without harming the skin barrier. It acts without clogging pore on skin. Rice flour contains Para Amino Benzoic Acid (PABA) which is used as UV protective agent. Ferulic acid present in it has anti-oxidant activity. It may be used in cosmetics as antioxidant agent to stabilize the formulation.

CONCLUSION

Various plants were studied to know about their phytoconstituents and health benefits. Most plants show antioxidant and anti-inflammatory action. Oxidation of cells can lead to cell death and necrosis. Long standing and excessive inflammation damages healthy cells. It leads to release of immune response such as Reactive Oxidative Species (ROS) which can lead to auto-immune diseases. These plants also have great anticarcinogenic action which may be directly or indirectly linked to antioxidant and anti-inflammatory action. Many plants studied shows anti-microbial properties of wide range such as antibacterial, antiviral, antiparasitic, etc. This is useful in prevention of acne production. Coconut oil, lemon, almond oil and licorice may be added to the formulation for moisturizing of skin. Plants like shatavari have Sita dosha according to Ayurveda, this may be used to maintain pH and temperature of skin. Some plants showed reduction in hyperpigmentation, helpful in creating flawless and even

skin tone. Vitamin E of almond oil and Para Amino Benzoic Acid (PABA) of rice powder (or flour) helps UV ray protection.

Studying of various formulations of herbal soap suggest one can use glycerin in formulation as humectant and moisturizer.

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